

Chapter 5 Indirect and Cumulative Effects

This chapter addresses indirect and cumulative effects of the project. The increased emission of greenhouse gases is a potential project effect, which is addressed under Questions 3 through 5.

1 What are indirect effects, and will the SR 522 project cause any?

Indirect effects are reasonably foreseeable effects caused by the proposed action in the future or outside of the project area. These effects can include changes to land use patterns, population density, or water quality.

Traffic volumes will continue to increase with or without the SR 522 project because of the planned and expected growth in the area. The SR 522 project will not change development patterns, because development patterns in the area are guided by the City of Monroe's Comprehensive Plan and Snohomish County's Comprehensive Plan.

The City's Comprehensive Plan describes planned area development for population and land use over a 20-year period. Since 1990, the City of Monroe has experienced substantial growth and is expected to continue to develop a more urban character within the city limits. The project will support this existing and planned growth.

Outside of the Monroe city limits, Snohomish County may be pressured to revise zoning to allow more development in some areas near SR 522. For example, there is a small, low-density residential area just southwest of the 164th Street SE

interchange that is outside the city limits but within the urban growth boundary and may be annexed by the City. However, allowing higher-density development outside the urban growth area will not be consistent with the Snohomish County Comprehensive Plan prepared in accordance with the Washington State Growth Management Act. Therefore, the SR 522 project is not expected to indirectly affect growth or development patterns.

As described in Chapter 4, a preliminary analysis indicates that approximately 140,000 cubic yards of soil will be removed (cut) and approximately 410,000 cubic yards of soil will be required (fill) for the project. Thus, at least 270,000 cubic yards of fill will be imported from an off-site pit for the project.

2 What are cumulative effects, and will the SR 522 project cause any?

Cumulative effects are the consequences caused by the project combined with other past, present, and reasonably foreseeable actions. Studying cumulative impacts allows the public and decision-makers to consider the “big picture” impact on the community and environment. Cumulative actions considered and evaluated in this section include other transportation projects and development.

The 2008–2013 Transportation Improvement Plan for the City of Monroe includes several improvements in the project vicinity:

- US 2/Kelsey Street Double Left-Turn Lane
- US 2/Chain Lake Road/Lewis Street (SR 203) Intersection Improvements
- Fryelands Boulevard/Main Street Roundabout
- US 2/Main Street/Old Owen Road Intersection Improvements
- Chain Lake Road Phase 2 Improvements

WSDOT has planned a US 2 bypass around the north side of Monroe since the 1960s. As part of this corridor, the SR 522

alignment will extend north of the bypass alignment. WSDOT owns much of the right-of-way necessary for the US 2 bypass and SR 522 extension, but no construction has been completed to date due to funding constraints.

One of the known development projects near the SR 522 project area is the North Kelsey Village shopping center. Construction of the shopping center is underway about 0.3 mile northeast of the SR 522/US 2 interchange, between Kelsey Street and Chain Lake Road. Both Kelsey Street and Chain Lake Road intersect with US 2 at signalized intersections and provide access to the site (City of Monroe 2007). The development will include Lowe's, and approximately 500,000 square feet of retail space, 100,000 square feet of office space, and 150 dwelling units on a 58-acre site. The total number of parking stalls is currently unknown, but will be in excess of 1,000. A State Environmental Policy Act (SEPA) EIS has already been prepared for the North Kelsey Development Plan. The EIS indicated that the primary unavoidable adverse impacts associated with the project were traffic impacts. The City of Monroe is planning about \$7 million of improvements to US 2 and local streets as mitigation. These transportation improvements, along with the SR 522 project, will provide a cumulative benefit for traffic operations in the area.

Other community development activities in the City of Monroe include four annexation projects totaling over 175 acres and several industrial developments/expansions, as well as residential development. Active projects in the City of Monroe are depicted on a map in Appendix H. In unincorporated Snohomish County, no active developments have been identified within 1 mile of SR 522.

Monroe's Transportation Improvement Plan projects may cause a cumulative increase in noise levels from traffic, which may affect wildlife that does not adapt well to an urban environment.

Fish, wetlands, vegetation, and wildlife may be affected by a cumulative increase in impervious surface area and decreased or fragmented habitat areas from the transportation and

development projects. However, the possible effects of these individual projects will be offset through mitigation measures required as part of local, state, and federal approvals required for the individual projects.

Future development in the area surrounding SR 522 may change how surface water flows and increase the pollutants in the stormwater runoff. These effects will occur with or without the project. With the proposed action, stormwater runoff from SR 522 will receive treatment prior to being discharged, which is an improvement over existing conditions. However, without the project the stormwater treatment facilities will not be in place, and a greater amount of untreated stormwater will flow into local streams. Effects to water quality will also occur if water from other developments flows into stormwater treatment facilities designed for SR 522 and increases the discharge to streams or flooding.

WSDOT will coordinate with the local agencies as these projects progress to avoid and minimize any potential cumulative impacts.

3 What efforts are underway to reduce greenhouse gas emissions?

Carbon dioxide is one of several greenhouse gases (GHGs) that plays a role in climate change. Any process that burns fossil fuel releases carbon dioxide into the air. Vehicles are a significant source of greenhouse gas emissions and contribute to global warming primarily through the burning of gasoline and diesel fuels.

National estimates show that the transportation sector (including on-road, airplanes and boats) accounts for almost 30 percent or more of total domestic CO₂ emissions. This percentage is based on 2004 data from the International Energy Administration and is consistent with 1996 guidelines on greenhouse gas emissions calculations issued by the Intergovernmental Panel on Climate Change (IPCC).

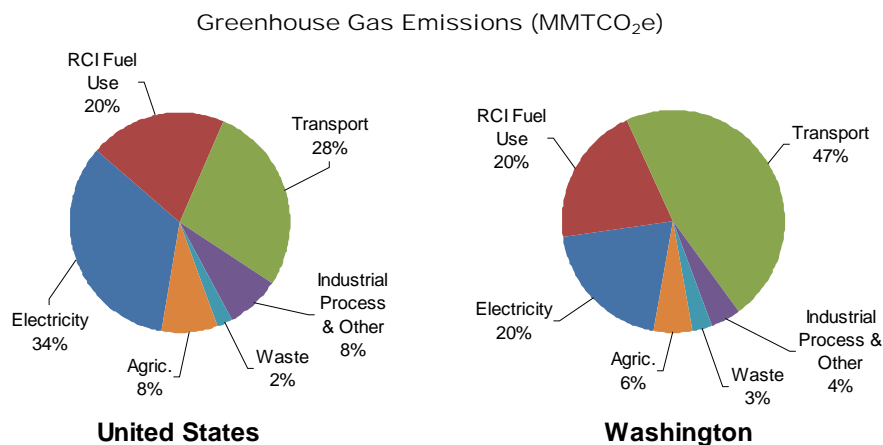
However, in Washington State, transportation accounts for nearly half of GHG emissions because the state relies heavily

What are greenhouse gases?

Greenhouse gases are gases in the atmosphere that trap the sun's energy and thereby contribute to rising surface temperatures. Greenhouse gases include carbon dioxide, methane, and nitrous oxide, which are byproducts of burning fossil fuels.

on hydropower for electricity generation unlike other states that rely on fossil fuels such as coal, petroleum, and natural gas to generate electricity. The next largest contributors to total gross GHG in Washington are fossil fuel combustion in the residential, commercial, and industrial (RCI) sectors at 20%; and in electricity consumption, also 20%. Exhibit 5-1 below shows the gross GHG emissions by sector, US and Washington State.

Exhibit 5-1



Source -- Leading the Way on Climate Change: the Challenge of Our Time, February 2008, Washington State Dept. of Ecology Publication #08-01-008

In February 2007, the Governor issued Executive Order 07-02 requiring state agencies to find ways to reduce greenhouse gas emissions and adapt to the future that climate change may create. On May 3, 2007, the Washington legislature passed Senate Bill 6001 which, among other things, adopted Governor Gregoire's Climate Change goals into state law. The law aims to achieve 1990 greenhouse gas levels by 2020, a 25% reduction below 1990 levels by 2035, and 50% by 2050.

WSDOT is aggressively pursuing strategies to address climate change and we recognize our responsibility to support the Governor's initiative. At this time, the main way to reduce greenhouse gas emissions from transportation is to reduce the amount of fuel consumed by drivers. This can be achieved by three means:

- Create more efficient driving conditions (reduce congestion)
- Reduce the amount of driving (transit, carpooling), and
- Introduce more fuel-efficient vehicles.

Many of our local, regional and statewide transportation system improvements and legislative initiatives will help to reduce emissions and improve the efficiency of the state's transportation system.

While the greenhouse gas reduction goals are clear, technical guidance and regulations to implement these goals are currently in development and will not be sufficiently determined before project design and construction permits are obtained for this project.

4 What effect will the highway widening, together with other transportation projects in the vicinity, have on greenhouse gas emissions?

Accurate quantitative modeling tools to evaluate greenhouse gas emissions at the project level are not available at this time. They are in development with the EPA, FHWA, and others. WSDOT is aware that some projects have applied EPA's tailpipe emission equation which estimates the amount of CO₂ that is emitted during combustion of a gallon of fuel consumed by a vehicle. This equation does not take into account the speed of vehicles or the effect of stop and go traffic on the roadway.

Since current tools are not able to account for speed, we are unable to show the effect of this project's improved traffic flow will have on emissions. We do know that traffic improvements proposed by this project will create smoother driving conditions that in general conserve fuel. Widening and intersection improvements proposed for the SR 522 Cathcart Road vicinity to US 2 project will minimize stop and go conditions and more consistent moderate-speed driving will promote efficient driving conditions. This proposed project will enable better movement of vehicles in 2030 for project

area intersections and on the mainline, thereby reducing traffic congestion and collisions. Decreased vehicle delay at SR 522 off and on ramps further reduces collisions and promotes more efficient driving.

5 How will this project adapt to climate change?

The IPCC defines adaptation as the “adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.” Furthermore, the IPCC concluded that adaptation will be necessary to address impacts resulting from the warming, which is already unavoidable due to past emissions. The effectiveness of any specific adaptation requires consideration of the expected value of the avoided damages against the costs of implementing the adaptation strategy.

Governor Gregoire committed the state to preparing for and adapting to the impacts of climate change as part of Executive Order 07-02. A new focus sheet entitled “Preparing for Impacts” is available on line at:

<http://www.ecy.wa.gov/climatechange/index.htm>

The SR 522 Cathcart Road vicinity to US 2 project has incorporated features as part of its standard design that will provide greater resilience and function with the potential effects brought on by climate change. These include:

- Increasing the capacity of the storm water treatment system on site to deal with the potential for greater storm water run-off, and similarly at an off-site habitat mitigation bank.
- Providing a constructed wetland with greater capacity to manage storm water treatment.
- Construction of erosion control measures to deal with potentially greater storm water run-off through measures such as stream bank riparian planting and amending planting areas with mulch to promote water conservation and erosion control.
- Compensating Snohomish River flood storage.

- Revegetating the roadside and areas disturbed by construction with native plants, which have drought-tolerant qualities, and to reduce exotic and invasive plant growth.
- Amending planting areas with mulch to promote water conservation, erosion control, and to reduce exotic and invasive plant growth.
- Enhancing erosion control with permeable surfaced clear zones.
- Allowing better access for emergency vehicles.